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TECH CENTER 1600/2900

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 3 <110> APPLICANT: Novartis AG
 5 <120> TITLE OF INVENTION: Adenovirus particles with mutagenized fiber proteins
 7 <130> FILE REFERENCE: 4-31452A
 9 <140> CURRENT APPLICATION NUMBER: US 09/870,203A
10 <141> CURRENT FILING DATE: 2001-05-30
12 <160> NUMBER OF SEQ ID NOS: 43
14 <170> SOFTWARE: PatentIn version 3.1
16 <210> SEQ ID NO: 1
17 <211> LENGTH: 1746
18 <212> TYPE: DNA
19 <213> ORGANISM: Human adenovirus type 5
21 <220> FEATURE:
22 <221> NAME/KEY: CDS
23 <222> LOCATION: (1)..(1746)
24 <223> OTHER INFORMATION:
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29 Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
30 1               5                   10                  15
32 tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc      96
33 Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
34             20                  25                  30
36 ttt gta tcc ccc aat ggg ttt caa gag agt ccc cct ggg gta ctc tct     144
37 Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
38         35                  40                  45
40 ttg cgc cta tcc gaa cct cta gtt acc tcc aat ggc atg ctt gcg ctc     192
41 Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
42     50                  55                      60
44 aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc     240
45 Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
46 65                  70                      75                  80
48 caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac     288
49 Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn
50             85                  90                      95
52 ata aac ctg gaa ata tct gca ccc ctc aca gtt acc tca gaa gcc cta     336
53 Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu
54             100                 105                 110
56 act gtg gct gcc gcc gca cct cta atg gtc gcg ggc aac aca ctc acc     384
57 Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr
58         115                 120                 125
60 atg caa tca cag gcc ccg cta acc gtg cac gac tcc aaa ctt agc att     432
61 Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile
62     130                 135                     140
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64 gcc acc caa gga ccc ctc aca gtg tca gaa gga aag cta gcc ctg caa
65 Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln
66 145             150             155             160             528
68 aca tca ggc ccc ctc acc acc acc gat agc agt acc ctt act atc act
69 Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr
70             165             170             175                 576
72 gcc tca ccc cct cta act act gcc act ggt agc ttg ggc att gac ttg
73 Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu
74             180             185             190                 624
76 aaa gag ccc att tat aca caa aat gga aaa cta gga cta aag tac ggg
77 Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly
78             195             200             205                 672
80 gct cct ttg cat gta aca gac gac cta aac act ttg acc gta gca act
81 Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr
82 210             215             220                             720
84 ggt cca ggt gtg act att aat aat act tcc ttg caa act aaa gtt act
85 Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr
86 225             230             235             240             768
88 gga gcc ttg ggt ttt gat tca caa ggc aat atg caa ctt aat gta gca
89 Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala
90             245             250             255                 816
92 gga gga cta agg att gat tct caa aac aga cgc ctt ata ctt gat gtt
93 Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val
94             260             265             270                 864
96 agt tat ccg ttt gat gct caa aac caa cta aat cta aga cta gga cag
97 Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
98             275             280             285                 912
100 ggc cct ctt ttt ata aac tca gcc cac aac ttg gat att aac tac aac
101 Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
102             290             295             300                 960
104 aaa ggc ctt tac ttg ttt aca gct tca aac aat tcc aaa aag ctt gag
105 Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
106 305             310             315             320             1008
108 gtt aac cta agc act gcc aag ggg ttg atg ttt gac gct aca gcc ata
109 Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
110             325             330             335                 1056
112 gcc att aat gca gga gat ggg ctt gaa ttt ggt tca cct aat gca cca
113 Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
114             340             345             350                 1104
116 aac aca aat ccc ctc aaa aca aaa att ggc cat ggc cta gaa ttt gat
117 Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
118             355             360             365                 1152
120 tca aac aag gct atg gtt cct aaa cta gga act ggc ctt agt ttt gac
121 Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
122             370             375             380                 1200
124 agc aca ggt gcc att aca gta gga aac aaa aat aat gat aag cta act
125 Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
126 385             390             395             400             1248
128 ttg tgg acc aca cca gct cca tct cct aac tgt aga cta aat gca gag
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129 Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
130                     405             410                 415
132 aaa gat gct aaa ctc act ttg gtc tta aca aaa tgt ggc agt caa ata        1296
133 Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
134             420                 425             430
136 ctt gct aca gtt tca gtt ttg gct gtt aaa ggc agt ttg gct cca ata        1344
137 Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
138         435                 440             445
140 tct gga aca gtt caa agt gct cat ctt att ata aga ttt gac gaa aat        1392
141 Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
142     450                 455             460
144 gga gtg cta cta aac aat tcc ttc ctg gac cca gaa tat tgg aac ttt        1440
145 Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu Tyr Trp Asn Phe
146 465                 470             475             480
148 aga aat gga gat ctt act gaa ggc aca gcc tat aca aac gct gtt gga        1488
149 Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
150                 485             490             495
152 ttt atg cct aac cta tca gct tat cca aaa tct cac ggt aaa act gcc        1536
153 Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
154             500             505             510
156 aaa agt aac att gtc agt caa gtt tac tta aac gga gac aaa act aaa        1584
157 Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
158         515             520             525
160 cct gta aca cta acc att aca cta aac ggt aca cag gaa aca gga gac        1632
161 Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Asp
162     530                 535             540
164 aca act cca agt gca tac tct atg tca ttt tca tgg gac tgg tct ggc        1680
165 Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp Ser Gly
166 545             550             555             560
168 cac aac tac att aat gaa ata ttt gcc aca tcc tct tac act ttt tca        1728
169 His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr Phe Ser
170                 565             570             575
172 tac att gcc caa gaa taa                                                 1746
173 Tyr Ile Ala Gln Glu
174                 580
177 <210> SEQ ID NO: 2
178 <211> LENGTH: 581
179 <212> TYPE: PRT
180 <213> ORGANISM: Human adenovirus type 5
182 <400> SEQUENCE: 2
184 Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
185 1               5                   10                  15
188 Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
189             20                  25                  30
192 Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
193     35                  40                  45
196 Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
197 50                  55                  60
200 Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
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RAW SEQUENCE LISTING   DATE: 02/05/2002
PATENT APPLICATION: US/09/870,203A   TIME: 14:00:19

Input Set : A:\4-31452A.ST25.txt
Output Set: N:\CRF3\02052002\I870203A.raw

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205                 85                  90                  95
208 Ile Asn Leu Glu Ile Ser Ala Pro Leu Thr Val Thr Ser Glu Ala Leu
209                 100                 105                 110
212 Thr Val Ala Ala Ala Ala Pro Leu Met Val Ala Gly Asn Thr Leu Thr
213         115                 120                 125
216 Met Gln Ser Gln Ala Pro Leu Thr Val His Asp Ser Lys Leu Ser Ile
217     130                 135                 140
220 Ala Thr Gln Gly Pro Leu Thr Val Ser Glu Gly Lys Leu Ala Leu Gln
221 145                 150                 155                 160
224 Thr Ser Gly Pro Leu Thr Thr Thr Asp Ser Ser Thr Leu Thr Ile Thr
225             165                 170                 175
228 Ala Ser Pro Pro Leu Thr Thr Ala Thr Gly Ser Leu Gly Ile Asp Leu
229             180                 185                 190
232 Lys Glu Pro Ile Tyr Thr Gln Asn Gly Lys Leu Gly Leu Lys Tyr Gly
233         195                 200                 205
236 Ala Pro Leu His Val Thr Asp Asp Leu Asn Thr Leu Thr Val Ala Thr
237     210                 215                 220
240 Gly Pro Gly Val Thr Ile Asn Asn Thr Ser Leu Gln Thr Lys Val Thr
241 225                 230                 235                 240
244 Gly Ala Leu Gly Phe Asp Ser Gln Gly Asn Met Gln Leu Asn Val Ala
245             245                 250                 255
248 Gly Gly Leu Arg Ile Asp Ser Gln Asn Arg Arg Leu Ile Leu Asp Val
249         260                 265                 270
252 Ser Tyr Pro Phe Asp Ala Gln Asn Gln Leu Asn Leu Arg Leu Gly Gln
253         275                 280                 285
256 Gly Pro Leu Phe Ile Asn Ser Ala His Asn Leu Asp Ile Asn Tyr Asn
257     290                 295                 300
260 Lys Gly Leu Tyr Leu Phe Thr Ala Ser Asn Asn Ser Lys Lys Leu Glu
261 305             310                 315                 320
264 Val Asn Leu Ser Thr Ala Lys Gly Leu Met Phe Asp Ala Thr Ala Ile
265             325                 330                 335
268 Ala Ile Asn Ala Gly Asp Gly Leu Glu Phe Gly Ser Pro Asn Ala Pro
269         340                 345                 350
272 Asn Thr Asn Pro Leu Lys Thr Lys Ile Gly His Gly Leu Glu Phe Asp
273         355                 360                 365
276 Ser Asn Lys Ala Met Val Pro Lys Leu Gly Thr Gly Leu Ser Phe Asp
277     370                 375                 380
280 Ser Thr Gly Ala Ile Thr Val Gly Asn Lys Asn Asn Asp Lys Leu Thr
281 385             390                 395                 400
284 Leu Trp Thr Thr Pro Ala Pro Ser Pro Asn Cys Arg Leu Asn Ala Glu
285             405                 410                 415
288 Lys Asp Ala Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile
289         420                 425                 430
292 Leu Ala Thr Val Ser Val Leu Ala Val Lys Gly Ser Leu Ala Pro Ile
293         435                 440                 445
296 Ser Gly Thr Val Gln Ser Ala His Leu Ile Ile Arg Phe Asp Glu Asn
297     450                 455                 460
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/870,203A

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Output Set: N:\CRF3\02052002\I870203A.raw

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300 Gly Val Leu Leu Asn Asn Ser Phe Leu Asp Pro Glu      480
301 465                   470             475
304 Arg Asn Gly Asp Leu Thr Glu Gly Thr Ala Tyr Thr Asn Ala Val Gly
305 465             485             490             495
308 Phe Met Pro Asn Leu Ser Ala Tyr Pro Lys Ser His Gly Lys Thr Ala
309             500             505             510
312 Lys Ser Asn Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Thr Lys
313             515             520             525
316 Pro Val Thr Leu Thr Ile Thr Leu Asn Gly Thr Gln Glu Thr Gly Asp
317             530             535             540
320 Thr Thr Pro Ser Ala Tyr Ser Met Ser Phe Ser Trp Asp Trp Ser Gly
321 545             550             555             560
324 His Asn Tyr Ile Asn Glu Ile Phe Ala Thr Ser Ser Tyr Thr Phe Ser
325             565             570             575
328 Tyr Ile Ala Gln Glu
329             580

332 <210> SEQ ID NO: 3
333 <211> LENGTH: 1746
334 <212> TYPE: DNA
335 <213> ORGANISM: Artificial Sequence
337 <220> FEATURE:
338 <223> OTHER INFORMATION: Codes for a mutated Human Adenovirus type 5 fiber protein.
340 <220> FEATURE:
341 <221> NAME/KEY: CDS
342 <222> LOCATION: (1)..(1746)
343 <223> OTHER INFORMATION:
346 <220> FEATURE:
347 <221> NAME/KEY: mutation
348 <222> LOCATION: (1222)..(1227)
349 <223> OTHER INFORMATION:
352 <400> SEQUENCE: 3
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354 Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
355 1               5               10              15
357 tat gac acg gaa acc ggt cct cca act gtg cct ttt ctt act cct ccc     96
358 Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
359             20              25              30
361 ttt gta tcc ccc aat ggg ttt caa gag agt ccc cct ggg gta ctc tct    144
362 Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
363             35              40              45
365 ttg cgc cta tcc gaa cct cta gtt acc tcc aat ggc atg ctt gcg ctc    192
366 Leu Arg Leu Ser Glu Pro Leu Val Thr Ser Asn Gly Met Leu Ala Leu
367 50              55              60
369 aaa atg ggc aac ggc ctc tct ctg gac gag gcc ggc aac ctt acc tcc    240
370 Lys Met Gly Asn Gly Leu Ser Leu Asp Glu Ala Gly Asn Leu Thr Ser
371 65              70              75              80
373 caa aat gta acc act gtg agc cca cct ctc aaa aaa acc aag tca aac    288
374 Gln Asn Val Thr Thr Val Ser Pro Pro Leu Lys Lys Thr Lys Ser Asn
375             85              90              95
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2/5/02

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/870,203A

DATE: 02/05/2002
TIME: 14:00:20

Input Set : A:\4-31452A.ST25.txt
Output Set: N:\CRF3\02052002\I870203A.raw